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						Other		Amendm	ent Number:		
Contr	act Number		Co	ntract Period 11/	30/2010 <b>To</b>	07/31/	2012	Title of Work Assig	nment/SF	Site Nam	e
EP-	C-10-06	50	Ba	se	Option Period Nu	mber 1		WSi/ CM, C	CS, ESN	A, CWS	S-DT
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				Pho	Phone Number: 513-569-7864						
(Signature) (Date)			FAX	FAX Number:							
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## WORK ASSIGNMENT PERFORMANCE WORK STATEMENT

Contract No. EP-C-10-060 Work Assignment: 1-01 WAM: Brian Pickard

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Brian Pickard	202-564-0827	202-566-0055	Pickard.Brian@epa.gov

**LOE: 5,760 hours** 

Period of Performance: August 1, 2011 to July 31, 2012

Title: Water Security Initiative Support for Evaluation of GCWW Pilot, Technical Support to Cooperative Agreement Pilots, Technical Products Development: Consequence Management, Customer Complaint Surveillance, and Enhanced Security Monitoring, and Contamination Warning System Deployment Tool Development

PWS Sections: 2.1, 2.2, 2.6, 2.9, 2.11, 2.14, 2.15, 2.16, 2.17, 3.1.1, 3.1.3, 3.1.13, 3.1.14, 3.1.15, 3.1.16, 3.1.18, 3.1.19

#### I. PURPOSE:

The purpose of this work assignment is to: 1) support evaluation of the contamination warning system (CWS) deployed at the Greater Cincinnati Water Works (GCWW); 2) provide technical support and consultation to Cooperative Agreement pilots; 3) provide support for development of technical products related to this work assignment scope; and 4) develop an overarching CWS Deployment Tool. The objectives of these efforts are to: 1) evaluate the feasibility and benefits of implementing a CWS, both for detecting contamination incidents as well as improving the day-to-day operation of a drinking water system; and 2) promote CWS adoption by drinking water utilities through development of an easy to use CWS deployment tool. These objectives are consistent with the mission of the United States Environmental Protection Agency (EPA) in the area of drinking water security and are a significant step towards fulfilling EPA's responsibilities under Homeland Security Presidential Directive #9 (HSPD-9). Efforts under this work assignment build toward the ultimate goal of the Water Security initiative: development of practical guidance on the design and implementation of a demonstrated and proven CWS for use by all drinking water systems in the United States.

The contractor shall support EPA in the areas defined above through the specific tasks described in detail under Section IV of this Work Assignment (WA). This WA focuses on the following elements of CWS demonstration: consequence management, customer complaint surveillance and enhanced security monitoring.

This project will require collaboration with a number of other groups both within and outside of EPA. In particular, it will be necessary to work closely with the other EPA teams working on HSPD-9 efforts, such as: credibility determination, technical evaluation, system evaluation, sampling and analysis, field screening, public health surveillance, online water quality monitoring (including event detection and modeling), stakeholder outreach, and project management and coordination. Additional related activities may include laboratory capability and capacity issues, risk and vulnerability assessments, Water/Wastewater Area Response Network (WARN) programs, and program management. Furthermore, the results of ongoing, relevant research should be integrated into the project in a timely and efficient manner, particularly research in the areas of monitoring and detection, analytical methods, field testing, and event detection. Finally, it will be necessary to collaborate with utilities, laboratories, local public health departments, local emergency management organizations, and other key stakeholders to implement the CWS.

This work assignment supports the mission of the Water Security Division (WSD) as described in the Water Security Strategy framework, which relates resources, activities, outputs, audience, short- and long- term outcomes to the WSD pillars of Prevention, Detection, Response, and Recovery. Additionally, this work assignment contributes to the commitments made in EPA's Strategic Plan: 2011 to 2015 and EPA's Homeland Security Strategy (2004). Under EPA's Strategic Plan, reference is made to Goal 2 (Clean and Safe Water), Objective 2.1 (Protecting Human Health), Sub-objective 2.1.1 (Water Safe to Drink), and to the Cross-Goal on homeland security. Under EPA's Homeland Security Strategy, reference is made to Objective 1 (Critical Infrastructure Protection).

In support of these requirements, this contract supports the nation's drinking and wastewater infrastructure, collectively known as the Water Sector, in being informed, coordinated, and prepared to prevent, detect, respond to, and recover from terrorist attack and other intentional acts, natural disasters, and other hazards (referred to as the "all hazards' approach), which may also occur, including the needs and challenges posed by natural disasters, catastrophic events, adaptation and impacts of climate change, floods, earthquakes, pandemic illness, and any other events which impact the safety and availability of our water supply.

In pursuit of these efforts, the contractor may be tasked with preparing a correlation summary comparing the results under this work assignment to the components of the Water Security Strategy framework.

#### II. BACKGROUND:

A CWS involves the active deployment and use of monitoring technologies/strategies and enhanced surveillance activities to collect, integrate, analyze, and communicate information to provide a timely warning of potential water contamination incidents and initiate response actions to minimize public health and economic impacts. The five monitoring and surveillance components of the Water Security initiative CWS are:

- Online monitoring of water quality parameters to detect a change from an established baseline that could be indicative of contamination.
- Public health surveillance to detect potential disease outbreaks in the population and determine if the cause of the outbreak was related to drinking water.
- Sampling and analysis (including field testing that occurs as part of site characterization) to establish a baseline for key parameters and contaminants, and triggered sampling and analysis implemented in response to an alarm from other monitoring and surveillance components of the CWS.
- Customer complaint surveillance to detect contaminants with a discernable odor, taste, or appearance.
- Enhanced security monitoring to detect physical intrusions into a drinking water system.

Two of the five monitoring and surveillance components are covered under this WA: customer complaint surveillance (CCS) and enhanced security monitoring (ESM). Public health surveillance, online monitoring of water quality parameters and sampling and analysis are addressed under WA 1-02 of this contract period of performance. A strategic outreach and communication plan has been developed under a different contract, and will be provided to the contractor.

In addition to the components listed above, a consequence management plan (CMP) is an essential element of a CWS that defines roles, responsibilities, and actions when a contamination incident is deemed "possible", as determined through initial trigger validation procedures within each of the monitoring and surveillance components. Consequence management (CM) involves gathering additional incident information to determine the credibility of the incident, while also specifying response actions, such as isolation of contaminated water, public notification, water use restrictions, and public health intervention, to protect public health and minimize damage to

the drinking water distribution system.

The evaluation of the CWS described above will require the application of a diverse set of tools and skills including: emergency response planning, communication and customer service system analysis, security equipment operation and maintenance, data management and analysis, crossorganization coordination, and general project management. This work assignment will require the contractor to apply these skills in performing the various tasks described in Section IV.

Under the previous work assignment, EPA continued to evaluate CWS data collected from the GCWW and worked with Expansion Utilities in implementing their CWSs. Individual component evaluations were prepared, and efforts related to system evaluation were performed. Although the Cooperative Research and Development Agreement (CRADA) between the City of Cincinnati and the U.S. EPA ended on June 6, 2009, evaluation activities related to this demonstration pilot are expected to continue through calendar year 2011. Furthermore, EPA will continue to build on efforts related to system evaluation during this work assignment period of performance.

During this contract period, EPA will continue to work with four additional pilot utilities, San Francisco, New York City, Dallas and Philadelphia, under cooperative agreements. Significant implementation activities related to these pilots began prior to the start of this work assignment. Using the experience gained during design, implementation and full deployment of the GCWW pilot, EPA will support the cooperative agreement pilots through consultation and product review. However, due to the nature of the cooperative agreement pilots, EPA will be significantly less involved than it was with the GCWW pilot. Prior to award of the cooperative agreements, EPA worked with the four pilot utilities to define substantial involvement on behalf of the Agency; however, the level of involvement may vary substantially from pilot to pilot. Thus the activities under subtasks that describe "support to cooperative agreement pilots" are estimated based on EPA's anticipated level of involvement across the four cooperative agreement pilots. These estimates should be used to develop the work plan in response to this statement of work, but the actual level of effort could deviate from work plan projections, based on pilot specifics, and will be tasked through technical direction.

## III. QA REQUIREMENTS:

Some of the tasks in this work assignment require the use of primary and/or secondary data. Collection, use and analysis of data will be identical to the procedures described in the PQAPP completed under WA 0-01, consistent with the Agency's quality assurance (QA) requirements. Work on these tasks cannot proceed until the contractor receives notification from the PO via email that utilization of the PQAPP completed under WA 0-01 has been approved for use on these tasks. The project specific quality assurance requirements must be addressed in the monthly progress reports as specified under Task 0, below.

#### IV. DETAILED TASK DESCRIPTION:

In addition to Task 0, Work Plan, Progress Reports, and Project Tracking, there are four tasks described in this work assignment. In addition to the Work Assignment Manager (WAM) named

on the title page, a Task Manager (TM) will be assigned to each task and will be authorized to provide technical direction to the contractor for that task. A summary listing of the tasks, along with the associated TM, is shown in the following table.

Task #	Task Title	Task Manager
0	Work Plan, Progress Reports, and Project Tracking	Brian Pickard
1	Consequence Management	Jeff Fencil
2	Customer Complaint Surveillance	Nelson Mix
3	Enhanced Security Monitoring	Nelson Mix
4	Contamination Warning System Deployment Tool	Brian Pickard

All direction under this work assignment will be provided as written technical direction from the TM, WAM or alternate WAM, as appropriate. If provided first as verbal technical direction to the contractor, it will be confirmed in writing within 5 calendar days, with a copy to the Project Officer and the Contracting Officer, and is subject to the limitations of the Technical Direction Clause in the contract. Each initial deliverable shall be provided to the EPA WAM and TM in draft form for review and comment. The contractor shall incorporate EPA review comments into revisions of the drafts. All drafts and final reports shall be approved by the TM or WAM.

## Task 0: Work Plan, Progress Reports, and Project Tracking (1,100 LOE hours)

The contractor shall develop a work plan that describes how each task will be carried out. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. The work plan shall also clearly document areas where coordination is required among tasks included in this WA, and where tasks in this WA must be coordinated with tasks in WA 1-02. If a subcontractor(s) is proposed and subcontractors are outside the metropolitan DC area, the contractor shall include information on plans to manage work and contract costs. The work plan shall also provide an analysis of the existing and projected constraints, and the feasibility of accomplishing the project's purpose.

In addition, the contractor shall use the project specific quality assurance plan supplement (PQAPP) developed under WA 0-01 (noted above), and ensure the quality of primary and secondary data used to complete these tasks. If using a previously prepared plan, the contractor shall prepare a statement indicating that this WA is a continuation of WA 0-01. The workplan shall explain that collection, use and analysis of data in this work assignment will be identical to the procedures described in the QAPP completed under WA 0-01. If issuing a new work assignment, with new QAPP requirements, then the work plan shall explain when the QAPP will be submitted based on the specific data requirements of the WA. When using a previously approved QAPP, the contractor shall immediately notify the Project Officer and WA manager if any changes to the tasks involving the collection and analysis of the data occur, and prepare a new or modified QAPP. Work on these tasks cannot proceed until the contractor receives notification of the new QAPP approval from the PO via e-mail. This task also includes monthly

progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoice LOE and costs` broken out by the tasks in this WA. Due to anticipated delays in subcontractor billing, the contractor shall also provide subcontractor labor reports to assist with cost projections and project management. In addition, the contractor shall submit a financial tracking spreadsheet populated with incurred and lagging costs for the current billing cycle. The monthly financial tracking spreadsheet shall be submitted monthly no later than the time of submission of the monthly progress and financial report.

In each monthly progress report, the contractor shall, at the introduction to the discussion of this work assignment, discuss actual progress toward achieving the purpose of this work assignment, including problems encountered, issues that may need to be resolved, and anticipated timing for completing the goals of the work assignment. The contractor shall provide an overview of contract projects, striving to implement efficiencies in performance when complimentary requirements are issued. The contractor shall assure that duplication of effort relative to other ongoing work assignments under this contract is not occurring

As directed by the EPA WAM, the contractor shall prepare short briefing materials, such as Gantt charts, illustrating the status of tasks being performed under this work assignment. EPA anticipates requesting such briefing materials up to six times during the period of performance of this work assignment.

<u>Task 0 Deliverables</u>: All products developed under this task shall be submitted to the EPA WAM and alternate WAM, and when pertinent to contract requirements, to the Contracting Officer and Project Officer. Specific deliverables and due dates under Task 0 are listed in the following table:

Sub-task	Deliverable	Due to EPA
0	WA 1-01 Work Plan including: schedule, staffing plan, LOE, cost estimates, key assumptions, and qualifications of proposed staff	20 days after receipt of WA
0	Monthly progress, financial reports and monthly financial tracking spreadsheet	Monthly, as specified in the contract
0	Gantt charts and other briefing materials as directed	5 days after technical direction to develop materials

Note: all days in this schedule refer to working days, excluding weekends and holidays.

## Task 1: Consequence Management (750 LOE hours)

EPA previously quantified and tracked consequence management metrics and developed a CM model in collaboration with the Simulation Study team. Additionally, a *CWS Exercise Development Toolbox*, a computer-based program to help utilities design their own drills and exercises based on DHS's Homeland Security Exercise and Evaluation Program (HSEEP) guidelines, was developed. The objective of Task 1 during this period of performance is to build on this previous consequence management work, as the WS initiative continues evaluation activities, support to cooperative agreement pilots and technical product development.

The contractor shall support this task with staff knowledgeable in emergency response planning, the National Incident Management System (NIMS), HSEEP protocols, and coding expertise as it relates to development of electronic tools. Task 1 is divided into three sub-tasks: 1) Evaluation of GCWW pilot; 2) Support to Cooperative Agreement Pilots; and 3) Technical Products and Guidance. Additional details regarding each sub-task will be provided to the Contractor by written technical direction from EPA.

## Sub-task 1.1: Evaluation of GCWW pilot (160 LOE)

The contractor shall support evaluation of GCWW CM activities as follows:

- 1. Support testing of the CM model used in the Simulation Study in support of the System Evaluation Task of WA 1-02. This may include completion of model development, parameterization of the model, and assistance in testing and validation of the model.
- 2. Support WA 1-02 in the development of the *Water Security initiative: Performance of the Cincinnati Contamination Warning System Pilot* report in the area of CM.
- 3. Finalize any remaining work related to the comprehensive component-level evaluation of the CM component, including the final report summarizing the results. This may involve use of the CM module developed as part of the overall Simulation Study.
- 4. Provide any CM-related analyses/investigation to support the Critical Infrastructure Partnership Advisory Council (CIPAC) process. These analyses would be requested by CIPAC Workgroup members as they review and assess CM evaluation data from both the GCWW and expansion pilot utilities. For cost estimating purposes, the contractor should assume up to three analyses with supporting text and figures, as appropriate, explaining results.

## Sub-task 1.2: Support to Cooperative Agreement Pilots (80 LOE)

The contractor shall perform the following activities in support of this task:

- 1. Develop technical presentations or summary papers that convey guidance or recommendations, based on lessons learned from the Cincinnati pilot, in the area of consequence management. Assume 1 product for each pilot (4 products total) during this option period.
- 2. Participate, when requested by the EPA TM, in conference calls with the cooperative agreement pilots and provide meeting summaries using a meeting summary template provided by the TM. Assume participation in up to 12 conference calls.
- 3. Provide technical support for the review of planning, design, implementation, and operational materials for the CM component. Examples of materials that may be submitted for review include consequence management, site characterization and crisis communication plans. Assume up to two review cycles per document.
- 4. Provide technical support for the review of consequence management evaluation plans. This may include evaluation/review of drill and exercise material. Assume up to two review cycles for the evaluation plan for each pilot.

## Sub-task 1.3: Technical Products and Guidance (510 LOE)

The Contractor shall:

1. The contractor shall coordinate, as necessary per Technical Direction, with EPA in finalizing the *CWS Exercise Development Toolbox*, which will be completed under a

- separate work assignment. The *CWS Exercise Development Toolbox* is an interactive computer-based program to aid drinking water utilities in designing, developing, conducting and evaluating discussion-based and operations-based exercises for a CWS. (50 LOE)
- 2. Upon receiving Technical Direction from the TM, the contractor shall link/incorporate the *Risk/Crisis Communication Plan (CCP) Guidance* document, developed under a separate work assignment, into the Contamination Warning System Deployment Tool (CWS-DT). For cost estimating purposes, the contractor shall assume that the link will consist of directing users of the CWS-DT to specific sections of a static version (pdf document) of the CCP.(80 LOE)
- 3. Upon receiving Technical Direction from the TM, the contractor shall develop *Contaminant Transport Field Guide Guidance*, based on previous GCWW work in this area. The guidance should be based on the previously developed GCWW PITO Guide, and assist utilities with pre-development of contaminant modeling maps/matrices and pre-established sampling locations. The GCWW PITO Guide will be provided to the contractor by the EPA TM.

The Contaminant Transport Field Guide Guidance shall be developed in accordance with the Contamination Warning System Deployment Tool standards/guidelines for tool and content development, as described in Subtask 4.2 of this WA. The contractor shall link/incorporate the Contaminant Transport Field Guide Guidance document into the Contamination Warning System Deployment Tool. For cost estimating purposes, the contractor shall assume that the link will consist of directing users of the CWSDT to specific sections of a static version (pdf document) of the Contaminant Transport Field Guide Guidance document. (220 LOE)

4. Develop up to two technical products that convey guidance or recommendations based on experiences from the GCWW pilot. All products shall be developed in accordance with the Contamination Warning System Deployment Tool standards/guidelines for content development, as described in Subtask 4.2 of this WA. (160 LOE)

<u>Task 1 Deliverables</u>: All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, GCWW staff, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task Deliverable		Due to EPA
1.1	Development and finalization of the CM portion of the WSi Simulation Model, as needed, including parameterization of the model, and assistance in testing and validation of the model.	Per technical direction
1.1	Finalize written report from comprehensive evaluation of the CM component at GCWW.	30 days after receipt of written TD
1.1	Analyses/investigation summaries to support the CIPAC process	Per technical direction

Sub-task	Deliverable	Due to EPA
1.2	Up to 4 technical products (e.g., presentations or summary papers) to support briefings to the cooperative agreement pilots	5 days after technical direction to develop presentation
1.2	Meeting summaries of WSi cooperative agreement pilot conference calls, as directed.	5 days after completion of conference call/webinar
1.2	Written reviews of WSi cooperative agreement pilot consequence management evaluation plans, as directed.	15 days after receipt of written TD
1.3	Final CWS Exercise Development Toolbox, including posting to WSi website	Per technical direction
1.3	Water Security Initiative: Contaminant Transport Field Guide Guidance	Per technical direction
1.3	Up to two technical products that convey guidance or recommendations based on experiences from the GCWW pilot	Per technical direction

## Task 2: Customer Complaint Surveillance (1,100 LOE hours)

EPA previously worked with the GCWW to evaluate and maintain the CCS component, as it transitioned into full deployment at GCWW. Event detection algorithm (EDA) deployment and notification system performance were evaluated and adjusted. Drills were conducted for the CCS component, and corresponding CCS procedures outlined in the Concept of Operations were adjusted, as appropriate. Finally, an Alarm Estimation Tool was developed to assist drinking water utilities with determining appropriate thresholds for customer complaint data streams. The objective of Task 2 is to build on this previous work, as the WS initiative continues post-CRADA evaluation activities and technical product development.

The contractor shall support this task with staff knowledgeable in the area of drinking water quality, customer complaint management, utility operations, and utility data management systems. Task 2 is divided into five sub-tasks: 1) Evaluation of GCWW pilot; 2) Support to Cooperative Agreement Pilots; 3) Technical Products and Guidance; 4) Support for CCS Vendor/integrator Webinars and In-person Meetings; and 5) Development of Contamination Warning System Deployment Tool Content. Additional details regarding each sub-task will be provided to the Contractor by written technical direction from EPA.

#### Sub-task 2.1: Evaluation of GCWW Pilot (160 LOE)

The contractor shall perform the following activities in support of evaluation of the GCWW pilot:

- 1. Support testing of the CCS model used in the Simulation Study in support of the System Evaluation Task of WA 1-02. This may include completion of model development, parameterization of the model, and assistance in testing and validation of the model.
- 2. Support WA 1-02 in the development of the *Water Security initiative: Performance of the Cincinnati Contamination Warning System Pilot* report in the area of CCS.
- 3. Finalize any remaining work related to the comprehensive component-level evaluation of the CCS component, including the final report summarizing the results. This may involve use of the CCS module developed as part of the overall Simulation Study.
- 4. Provide any CCS-related analyses/investigation to support the CIPAC process. These analyses would be requested by CIPAC Workgroup members as they review and assess

CCS evaluation data from both the GCWW and expansion pilot utilities. For cost estimating purposes, the contractor should assume up to three analyses with supporting text and figures, as appropriate, explaining results.

## Sub-task 2.2 Support to Cooperative Agreement Pilots (80 LOE)

The activities listed below represent EPA's anticipated level of involvement with the four cooperative agreement pilots in the area of customer complaint surveillance. The contractor shall perform the following activities in support of cooperative agreement pilots:

- 1. Develop technical presentations or summary papers that convey guidance or recommendations, based on lessons learned from the Cincinnati pilot, in the area of CCS. Assume 1 product for each pilot (4 products total) during this option period.
- 2. Participate, when requested by the EPA TM, in conference calls with the cooperative agreement pilots and provide meeting summaries. Assume participation in up to 12 conference calls.
- 3. Provide technical support for the review of planning, design, implementation, and operational materials for the CCS component. Examples of materials that may be submitted for review include assessment of possible customer complaint data streams, selection of appropriate EDAs, descriptions of notification systems and initial trigger validation steps. Assume one review per document.
- 4. Provide technical support for the review of CCS component evaluation plans. This may include evaluation/review of drill and exercise material. Assume one review of the evaluation plan for each pilot.

## Sub-task 2.3: Technical Products and Guidance (460 LOE)

- 1. Upon receiving Technical Direction from the TM, the contractor shall finalize the Risk-based Threshold Analysis Tool, developed under the previous period of performance. The Risk-based Threshold Analysis Tool shall be developed in accordance with the Contamination Warning System Deployment Tool standards/guidelines for content development, as described in Subtask 4.2 of this WA. The contractor shall link/incorporate the Risk-based Threshold Analysis Tool into the Contamination Warning System Deployment Tool. For cost estimating purposes, the contractor shall assume that the link will consist of directing users of the CWS-DT to a functional version of the tool. (LOE 100)
- 2. Upon receiving Technical Direction from the TM, the contractor shall perform in-depth research regarding Taste & Odor characteristics of priority contaminants. Additionally, the contractor shall investigate taste and odor categories used by water sector utilities as a means to gauge how these categories may be standardized across the Water Sector. Findings from the investigation shall be compiled in a report that would be used to approach Water Sector associations, such as AWWA and AMWA regarding the adoption of these standardized classifications. (LOE 160)
- 3. Develop up to two technical products (white papers, etc) that convey guidance or recommendations based on experiences from the GCWW pilot or the Cooperative Agreement pilots. All products shall be developed in accordance with the Contamination Warning System Deployment Tool standards/guidelines for content development, as described in Subtask 4.2 of this WA. 4. Technical products may include:
  - a. Open Source generic code for event detection algorithms.

- b. Continued spatial analysis and/or IVR submenu dual-use.
- c. Feasibility of mobile applications for self identified customer complaints. (LOE 200)

Sub-task 2.4: Support for CCS Vendor/integrator Webinars and Workshop (200 LOE) Upon technical direction from the EPA TM, the contractor shall provide logistical support for up to three (3) CCS webinars and one (1) face-to-face meeting related to CCS Vendor/Integrator workshop. The contractor shall reserve meeting facilities with webcasting and recording capabilities at the location approved by the EPA TM and support the following activities:

- Identify lodging facilities near the venue for participants
- Notify attendees of the arrangements
- Webcast and record the events
- Prepare and distribute to attendees the following meeting information:
  - o Agenda/meeting outline
  - List of participants
  - Hotel information
  - Directions to hotel
  - Name badges

As tasked through technical direction, the contractor shall provide workshop notebooks. At the workshop, the contractor shall take notes and provide logistical troubleshooting. For estimating purposes, the contractor shall assume up to 30 participants at the face-to-face workshop, which would be 1 day in length. In addition, the contractor shall assume participation of up to three contractor staff to attend the face-to-face workshop.

## <u>Sub-task 2.5 Development of Contamination Warning System Deployment Tool Content</u> (200 LOE)

The contractor shall work with EPA in development of a Contamination Warning System Deployment Tool (CWS-DT), an interactive computer-based program to aid drinking water utilities in Contamination Warning System design and deployment. Under this sub-task, the contractor shall aid EPA in developing a CCS Design Document for the CWS-DT. The CCS Design Document shall be designed to serve as underlying guidance that users of the CWS-DT will be referred to when given gap recommendations. The CCS Design document shall be structured such that it aligns with the Basic, Intermediate, and Advanced recommendations in the CCS Self Assessment The contractor shall assume travel for one contractor staff for a 2-day face-to-face workshop in Washington, D.C. for CCS design document development.

<u>Task 2 Deliverables</u>: All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, GCWW staff, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

	Sub-task	Deliverable	Due to EPA
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Sub-task	Deliverable	Due to EPA
2.1	Development and finalization of the CCS portion of the WSi Simulation Model, as needed, including parameterization of the model, and assistance in testing and validation of the model.	30 days after receipt of written TD
2.1	Finalize written report from comprehensive evaluation of the CCS component at GCWW.	30 days after receipt of written TD
2.1	Analyses/investigation summaries to support the CIPAC process	Per technical direction
2.2	Up to 4 technical products (e.g., presentations or summary papers) to support briefings to the cooperative agreement pilots	5 days after technical direction to develop presentation
2.2	Meeting summaries of WSi cooperative agreement pilot conference calls, as directed.	5 days after completion of conference call/webinar
2.3	Taste and Odor investigative reports:  Taste & Odor characteristics of priority contaminants; Taste & Odor categories used by water sector utilities	Per technical direction
2.3	Up to two technical products that convey guidance or recommendations based on experiences from the GCWW pilot	Per technical direction
2.4	Summary notes of CCS Vendor/integrator face-to-face workshop	5 days after completion of workshop
2.5	CCS Design Document content	Per technical direction

## Task 3: Enhanced Security Monitoring (860 LOE hours)

EPA previously worked with the GCWW to evaluate and maintain the ESM component, as it transitioned into full deployment at GCWW. Drills were conducted for the ESM component, and corresponding ESM procedures outlined in the Concept of Operations were adjusted, as appropriate. The objective of Task 3 is to build on this previous work, as the WS initiative continues post-CRADA evaluation activities and technical product development.

The contractor shall support this task with staff knowledgeable in the area of physical security, vulnerability assessments, utility operations, and utility data management systems. Task 3 is divided into four sub-tasks: 1) Evaluation of GCWW pilot; 2) Support to Cooperative Agreement Pilots; 3) Technical Products and Guidance; and 4) Development of Contamination Warning System Deployment Tool Content. Additional details regarding each sub-task will be provided to the Contractor by written technical direction from EPA.

#### Sub-task 3.1: Evaluation of GCWW Pilot (160 LOE)

The contractor shall perform the following activities in support of evaluation of the GCWW pilot:

- 1. Support the development and testing of the ESM model used in the Simulation Study in support of the System Evaluation Task of WA 1-02. This may include completion of model development, parameterization of the model, and assistance in testing and validation of the model.
- 2. Support WA 1-02 in the development of the *Water Security initiative: Performance of the Cincinnati Contamination Warning System Pilot* report in the area of ESM.
- 3. Finalize any remaining work related to the comprehensive component-level evaluation of the ESM component, including the final report summarizing the results. This may involve use of the ESM module developed as part of the overall Simulation Study.

4. Provide any ESM-related analyses/investigation to support the CIPAC process. These analyses would be requested by CIPAC Workgroup members as they review and assess ESM evaluation data from both the GCWW and expansion pilot utilities. For cost estimating purposes, the contractor should assume up to three analyses with supporting text and figures, as appropriate, explaining results.

## Sub-task 3.2 Support to Cooperative Agreement Pilots (80 LOE)

The activities listed below represent EPA's anticipated level of involvement with the four cooperative agreement pilots in the area of ESM. The contractor shall perform the following activities in support of cooperative agreement pilots:

- 1. Develop technical presentations or summary papers that convey guidance or recommendations, based on lessons learned from the Cincinnati pilot, in the area of ESM. Assume 1 product for each pilot (4 products total) during this option period.
- 2. Participate, when requested by the EPA TM, in conference calls with the cooperative agreement pilots and provide meeting summaries. Assume participation in up to 12 conference calls.
- 3. Provide technical support for the review of planning, design, implementation, and operational materials for the ESM component. Examples of materials that may be submitted for review include plans for intrusion equipment, video equipment and transmission, communications options, and human-machine interface development. Assume one review per document.
- 4. Provide technical support for the review of ESM component evaluation plans. This may include evaluation/review of drill and exercise material. Assume one review of the evaluation plan for each pilot.

## Sub-task 3.3: Technical Products and Guidance (200 LOE)

Develop up to two technical products (white papers, etc) that convey guidance or recommendations based on experiences from the Cincinnati pilot or the Cooperative Agreement pilots. All products shall be developed in accordance with the Contamination Warning System Deployment Tool standards/guidelines for content development, as described in Subtask 4.2 of this WA. Technical products may include:

- 1. The use of Automated Metering Infrastructure to augment ESM.
- 2. Analysis of Cost Effective Options for ESM Deployment
- 3. Correlation of Risk Reduction Units to the ASME/ AWWA J100 Risk and Resilience Management.
- 4. Long-Term Strategy for O&M of a Physical Security System.

# <u>Sub-task 3.4 Development of Contamination Warning System Deployment Tool Content</u> (420 LOE)

The contractor shall work with EPA in development of a CWS-DT, an interactive computer-based program to aid drinking water utilities in Contamination Warning System design and deployment. Under this sub-task, the contractor shall assist EPA in development of ESM content for the CWS-DT as follows:

1. ESM Primer. The contractor shall aid EPA in developing an ESM Primer which reviews and highlights key aspects of ESM for the user. The contractor shall use the Public

Health Primer, to be provided by EPA, as a template in developing the ESM Primer.

2. ESM Self-Assessment. The contractor shall aid EPA in developing ESM Self-Assessment content for the CWS-DT, which includes a series of questions designed to reveal gaps in design or development of a ESM component. The contractor shall also develop introductory language/context content that shall accompany each Self-Assessment question. The contractor shall use the Customer Complaint Surveillance Self-Assessment and context language, to be provided by EPA, as a template in developing the ESM Self-Assessment and context language.

Additionally, the contractor shall aid EPA in developing tiered recommendations for each question/potential gap in the ESM Self-Assessment. The recommendation content for each gap shall, where possible, be grouped into three main categories: "Basic", "Intermediate" and "Advanced". The contractor shall use the Customer Complaint Surveillance grouped recommendations, to be provided by EPA, as a template in developing the ESM recommendations.

- 3. ESM Gap Analysis and Action Plan. The contractor shall aid EPA in developing an ESM Gap Analysis and Action Plan, based on the Self-Assessment content and recommendations. The contractor shall use the Customer Complaint Surveillance Gap Analysis and Action Plan, to be provided by EPA, as templates during development.
- 4. ESM Design Document. The contractor shall aid EPA in developing an ESM Design Document for the CWS-DT. The ESM Design Document shall be designed to serve as underlying guidance that users of the CWSDT will be referred to when given gap recommendations. The ESM Design document shall be structured such that it aligns with the Basic, Intermediate, and Advanced recommendations in the ESM Self Assessment. The contractor shall use the Customer Complaint Surveillance Design Document, to be provided by EPA, as a template in developing the ESM Design document.

<u>Task 3 Deliverables</u>: All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, GCWW staff, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA
Development and finalization of the ESM portion of the WSi 3.1 Simulation Model, as needed, including parameterization of the model, and assistance in testing and validation of the model.		30 days after receipt of written TD
3.1	Finalize written report from comprehensive evaluation of the ESM component at GCWW.	30 days after receipt of written TD
3.1	Analyses/investigation summaries to support the CIPAC process	Per technical direction
3.2	Up to 4 technical products (e.g., presentations or summary papers) to support briefings to the cooperative agreement pilots	5 days after technical direction to develop presentation

Sub-task	Deliverable	Due to EPA
3.2	Meeting summaries of WSi cooperative agreement pilot conference calls, as directed.	5 days after completion of conference call/webinar
3.3	Up to two technical products that convey guidance or recommendations based on experiences from the GCWW pilot	Per technical direction
3.4	ESM Primer Content	Per technical direction
3.4	ESM Self-Assessment Content, including context and recommendations	Per technical direction
3.4	ESM Gap Analysis and Action Plan content	Per technical direction
3.4	ESM Design Document content	Per technical direction

### Task 4: Contamination Warning System Deployment Tool (1,950 LOE hours)

The contractor shall work with EPA in development of a Contamination Warning System Deployment Tool (CWS-DT), an interactive computer-based program to aid drinking water utilities in CWS design and deployment. The CWS-DT shall be an easy to use software program that allows users to navigate to and access existing tools from within the comprehensive WSi tool archive. Additional characteristics of the CWS-DT shall include:

- Provide a single point of entry to CWS users for WSi tools and guidance needed to implement a CWS;
- Provide an intuitive and consistent "delivery system" for information and guidance across the program and all components (serves as a comprehensive knowledge management system);
- Allow for a mix of interactive and static interfaces. For example, decision trees, training, and asset population may be interactive, while step-wise field and laboratory procedures, issue-specific materials, background information may be static (hard copy pdf files or HTML training based programs). Brief, issue-specific static information may be developed;
- Include interactive support to help utilities determine the desired end state and most effective implementation approach to meet this end state;
- Include access to component self-assessments; and
- Include the capability to track utility milestones for program tracking.

The contractor shall assist EPA in the development of the CWS-DT framework content and be responsible for the development of the software, including coding and platform development.

Task 4 is divided into four sub-tasks: 1) Update of CWS-DT Documents; 2) Development of Standards/Guidelines for CWS-DT Integration; and 3) Development and Testing of the CWS-DT. Additional details regarding each sub-task will be provided to the Contractor by written technical direction from EPA.

## Sub-task 4.1 Development of CWS-DT Documents (200 LOE)

The contractor shall assist EPA in the design and development of the CWS-DT by updating the following documents that were developed in the previous period of performance:

- 1. CWS-DT Work Plan. The contractor shall develop a revised CWS-DT Work Plan that describes the processes, specific activities, and schedule for completion of the CWS-DT.
- 2. CWS-DT Requirements and Design Document. The contractor shall update and revise the *Software Requirements and Design Specification* document developed in the previous period of performance. The *Software Requirements and Design Specification* shall clearly define the CWS-DT structure, data flow and User Interface options, as well as detail the overall approach and rationale for the final structure and data/process flow of the tool. The document shall also integrate comments and suggestions from the WSi CIPAC engagement process, as appropriate and as directed by the TM.

## Sub-task 4.2 Development of Standards/Guidelines for CWS-DT Integration (400 LOE)

The contractor shall develop standards and/or guidelines for Water Security initiative component tools and content material that may be incorporated into the CWS-DT. The standards/guidelines shall ensure that any tools or content developed at the component or system level can be easily integrated into the overall CWS-DT structure/design. These standards and guidelines shall apply to all appropriate tools and content material developed in this WA, as well as WA 1-02 of this contract period of performance.

## Sub-task 4.3 Development, Coding and Testing of the CWS-DT (1,350 LOE)

- 1. Upon receiving technical direction for the TM, the contractor shall develop a Beta version of the CWS-DT according to the latest version of the CWS-DT Architecture, dated 6/1/2011 and supplied by EPA, including completion of all software, coding and platforms for the Entry Screens, Utility Profile, Resource Inventory (including Resource Report) and the CCS component portions of the Self-assessment, Gap Analysis and Action Plan. The Beta version shall also incorporate either the Public Health Surveillance or CCS content for the Component Primer, as instructed by the TM. Finally, the Beta version of the CWS-DT shall incorporate the CCS Design Document content, as described in subtask 2.5 of this WA. The CWS-DT shall be constructed in accordance with the final CWS-DT Requirements and Design documents. All software shall be in compliance with applicable EPA software development requirements.
- 2. The contractor shall develop a *CWS-DT Test Plan* to ensure that data flow and expected outputs function as specified in the *Software Requirements and Design Specification*. The contractor shall test the CWS-DT Beta version in accordance with the *Test Plan* to ensure functionality of the tool.

<u>Task 4 Deliverables</u>: All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, GCWW staff, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA		
4.1	Draft and Final CWS-DT Work Plan.	30 days after receipt of written TD		
4.1	Draft and Final Software Requirements and Design Specification	30 days after receipt of written TD		

Sub-task	Deliverable	Due to EPA	
4.2 Draft Standards or Guidelines for WSi Component Tools/Content Material Integration into the CWS-DT		30 days after receipt of written TD	
4.3	CWS-DT Beta Version	180 days after receipt of written TD, or per CWS-DT Work Plan	
4.3	Draft and Final CWS-DT Test Plan	30 days after receipt of written TD	

#### V. SCHEDULE/DELIVERABLES

Detailed listings of deliverables and due dates are included for each task in Section IV.

## VI. REPORTING REQUIREMENTS

Monthly Progress Reports (including a progress evaluation discussion) Financial Reports QA Supplemental report (if applicable)

#### VII. GREEN MEETINGS AND CONFERENCES

The contractor shall follow the provision of EPA prescription 1523.703-1, Acquisition of environmentally preferable meeting and conference services (May 2007), for the use of off-site commercial facilities for an EPA event, whether the event is a meeting, conference, training session, or other purpose. Environmental preferability is defined at FAR 2.101, and shall be used when soliciting quotes or offers for meeting/conference services on behalf of the Agency.

## QUALITY ASSURANCE SURVEILLANCE PLAN for the Water Security Division's Technical, Analytical, and Regulatory Mission Support Performance Work Statement

## **Quality Assurance Surveillance Plan**

The requirements contained in this work assignment are considered performance-based, focusing on the Agency's desired results and outcomes. The contractor shall be responsible for determining the most effective means by which these requirements will be fulfilled. In order to

fulfill the requirements, the contractor shall design innovative processes and systems that can deliver the required services in a manner that will best meet the Agency's performance objectives. This performance-based requirement represents a challenge to the contractor to develop and apply innovative and efficient approaches for achieving results and meeting or exceeding the performance objectives, measures, and standards described below. The Contractor's performance will be reflected in the positive or negative evaluation offered by the Agency in the Contractor Performance Evaluation (CPE) which is evaluated annually (per the "Contractor Performance Evaluation" clause in the contract). The Work Assignment Manager shall submit a complete annual review of the areas outlined in the Quality Assurance Surveillance Plan (QASP), included in the contract, which will then be utilized by the Project Officer in preparing the overall evaluations submitted annually in response to the Contractor Performance Evaluation requirements in the contract.

General Management and Administration										
Performance Requirement	Measurable Performance Standards	Surveillance Methods	Incentives/Disincentives							
Management and Communications: The Contractor shall maintain contact with the EPA CO, PO and WAM throughout the performance of the contract and shall immediately bring potential problems to the attention of the appropriate EPA WAM. In cases where issues have a direct impact on project schedules or cost, the contractor shall provide options for EPA's consideration on resolving or mitigating the impacts.	Any issues that impact project schedules or cost shall be brought to the attention of the appropriate EPA WAM within 3 business days of occurrence.	100% of active work assignments under the contract will be reviewed by the EPA WAM monthly (via monthly progress report) to identify unreported issues. The EPA WAM will report any issues to the EPA PO who will bring the issue(s) to the Contractor's attention through the CO.	Unsatisfactory rating under the category of Business Relations in the NIH Performance Evaluation System if two or more incidents occur during an applicable period of performance when the contractor does not meet the measurable performance standards for a given contract period.							
Timeliness: Services and deliverables shall be in accordance with schedules stated in each work assignment or tasking document, unless amended or modified by an approved EPA action.	During any period of performance, 90% of all submitted deliverables shall be submitted no later than 5 business days past the due date.	100% of active work assignments under the contract will be reviewed by the EPA WAM monthly (via monthly progress report & milestones established for each deliverable) to compare actual delivery dates against those approved. The EPA WAM will report any issues to the EPA PO who will bring the issue(s) to the Contractor's attention through the CO.	Unsatisfactory rating under the category of Timeliness in the NIH Performance Evaluation System when the contractor does not meet the measurable performance standards during an applicable period of performance.							

Cost Management and Control: The Contractor shall monitor, track and accurately report level of effort, labor cost, other direct cost and fee expenditures to EPA through progress reports and approved special reporting requirements.

The Contractor shall assign appropriately leveled and skilled personnel to all tasks, practice and encourage time management, and ensure accurate and appropriate time keeping.

The contractor shall manage costs to the level of approved ceiling on the work assignment. The contractor shall notify the WAM/PO when 75% of the approved funding ceiling for the work assignment is reached.

The EPA PO will routinely meet with the Contractor's Project Manager to discuss the work progress and contract and individual work assignment expenditures. The EPA PO shall review the Contractor's monthly progress reports and request the WAMs verification of expenditures and technical progress before authorizing invoice payments.

Unsatisfactory rating under the category of Cost Control in the NIH Performance Evaluation System when the contractor does not meet the measurable performance standards during an applicable period of performance.

Technical Effort: The analyses or products developed by the contractor shall be factual and defensible and based on sound science and engineering. All data shall be collected from reputable sources and quality assurance measures shall be conducted in accordance with contract, agency requirements and any additional requirements outlined in individual work assignments or technical directives. Any work requiring the contractor to provide options or recommendations shall include the rationale used in selecting the option/recommendation and all other options and recommendations considered.

All analyses conducted for EPA by the Contractor must be factual and based on sound science and engineering. All analyses and products (initial and final drafts) shall conform in format and content to requirements specified by the WAM in written technical direction, and should meet the objectives stated in the work assignment. All initial draft documents shall be clearly written at a level appropriate to the targeted audience. All information shall be factual, technically sound, and accurate, with data sources identified.

Draft versions of a document shall require no more than two editorial revisions.

EPA will review all analyses and work products conducted by the Contractor and will independently consider the merit. EPA may opt to peer review analyses to further validate merit.

The EPA WAM/TM (Task Manager) will review initial drafts to assess technical accuracy and editorial quality. The WAM/TM will identify all inaccuracies and needed edits and corrections to the contractor in the initial review of draft documents.

Unsatisfactory rating under the category of QUALITY OF PRODUCT OR SERVICE in the NIH Performance Evaluation System when the contractor does not meet the measurable performance standards during an applicable period of performance, even after review input and follow up discussion by Agency personnel.

## Socio-Economic Utilization: The

Contractor shall assess all agency requirements outlined in work assignments for opportunities to fully utilize the knowledge and experience of its socioeconomic team members. Work shall be allocated in a manner that ensures the Contractor's annual subcontracting goals are met.

The Contractor shall meet a standard of at least 80% of the dollar goals outlined in their subcontracting plan during each period of performance, unless Agency priorities prevent or preclude such tasking. EPA will monitor the contractor's utilization of socio-economic firms by reviewing the contractor's submittal of Standard Forms (SF) 294 and (SF) 295.

If less than 80% is reached during an applicable period of performance, the contractor shall outline the steps that will be taken to meet the annual goals outlined in their plan, or provide justification as to the rationale for the lack of meeting the subcontracting plan goals. Performance that does not meet the stated goals without sufficient justification will be reported as an **Unsatisfactory** rating under the category of **BUSINESS RELATIONS,** and MEETING SDB **SUBCONTRACTING REQUIREMENTS** in the NIH Performance Evaluation System.

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